

L11 ANSWER 4 OF 17 CA COPYRIGHT 2003 ACS

AN 135:89154 CA

TI **Immobilization of S-hydroxynitrile lyase for synthesis of optically-active cyanohydrins from carbonyl compounds**

IN Senba, Takashi; Dobashi, Yukio

PA Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001190275	A2	20010717	JP 2000-3386	20000112
	EP 1116789	A1	20010718	EP 2001-300240	20010112
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2002064840	A1	20020530	US 2001-758317	20010112
PRAI	JP 2000-3386	A	20000112		

AB **Immobilization of S-hydroxynitrile lyase on porous resin for synthesis of optically-active cyanohydrins is disclosed.** Ceramics, silica, alumina, or silica alumina based resin can be used. Euphorbiaceae, Gramineae derived **S-hydroxynitrile lyase** can be used. Optically-active **cyanohydrins** can be synthesized by bringing carbonyl compds. and cyanogen compd. in contact with the **immobilized** enzyme in the presence of water insol. org. solvent. Synthesis of S-3-phenoxy benzaldehyde **cyanohydrin** from diisopropyl ether, 3-phenoxy benzaldehyde, hydrogen cyanide-diisopropyl ether soln., is described. Synthesis of 99.9% optically-active S-mandelonitrile from butylmethyl ether and benzaldehyde is also described.

must be silica gel!

NPT

L22 ANSWER 1 OF 2 CA COPYRIGHT 2003 ACS

AN 137:136838 CA

TI Effects of solvent, **water activity** and temperature on
lipase and hydroxynitrile **lyase** enantioselectivity

AU Persson, Mattias; Costes, David; Wehtje, Ernst; Adlercreutz, Patrick

CS Center for Chemistry and Chemical Engineering, Department of
Biotechnology, Lund University, Lund, S-221 00, Swed.

SO Enzyme and Microbial Technology (2002), 30(7), 916-923

CODEN: EMTED2; ISSN: 0141-0229

PB Elsevier Science Ireland Ltd.

DT Journal

LA English

AB The influence of the reaction conditions on the enantioselectivity of
reactions catalyzed by lipases or hydroxynitrile **lyases** (HNLs)
in org. solvents was investigated. The lipases catalyzed kinetic resolu-
of chiral secondary alcs. or chiral carboxylic acids and the HNLs
catalyzed asym. addn. of hydrogen cyanide to aldehydes. The temp. effects
on enantioselectivity were studied in detail. From measurements of the
enantiomeric ratio (E) at different temps. the activation parameters
.DELTA..DELTA.H# and .DELTA..DELTA.S# were detd. In the lipase-catalyzed
reactions the enthalpic and entropic effects on E always counteracted,
while in a few of the HNL-catalyzed reactions, .DELTA..DELTA.H# and
.DELTA..DELTA.S# had opposite signs and therefore the effects cooperated
to give high E values ($-RT \ln E = .DELTA..DELTA.G# = .DELTA..DELTA.H# -$
 $T.DELTA..DELTA.S#$). In all the HNL-catalyzed reactions and most of the
lipase-catalyzed ones, the enantioselectivity increased with decreasing
reaction temp. However, in one of the lipase-catalyzed reactions, the
enantioselectivity decreased with decreasing temp. The theor. background
of these observations was discussed. In the HNL-catalyzed reactions, the
enantioselectivity increased with increasing **water**
content up to water satn., while in the lipase-catalyzed reactions
the opposite trend was found in one case and in the others no significant
effect was obsd. Solvent mixts. of diisopropylether and hexane were used
to obtain solvents with different log P values. The log P value of the
solvent did not influence the enantioselectivity in the HNL-catalyzed
reactions, while the enantioselectivity increased with increasing log P
value in two of the lipase-catalyzed reactions. The reaction temp. was
shown to be a very useful way to influence enzyme selectivity and the
effects obtained could be rationalized. The influence of the reaction
medium (solvent and **water activity**) is much more
difficult to rationalize and predict.

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 2 OF 2 CA COPYRIGHT 2003 ACS

AN 136:4802 CA

TI An enzyme reaction method and a method for enzymatically producing an
optically active cyanohydrin

IN Semba, Hisashi; Dobashi, Yukio

PA Nippon Shokubai Co., Ltd., Japan

SO Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1160329	A2	20011205	EP 2001-304858	20010604
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001346595	A2	20011218	JP 2000-166578	20000602
	JP 2001346596	A2	20011218	JP 2000-166579	20000602
	JP 2002017382	A2	20020122	JP 2000-206130	20000707

	US 2002006646	A1	20020117	US 2001-870821	20010601
	JP 2002355085	A2	20021210	JP 2001-363840	20011129
PRAI	JP 2000-166578	A	20000602		
	JP 2000-166579	A	20000602		
	JP 2000-206130	A	20000707		
	US 2001-870821	A	20010601		
OS	CASREACT 136:4802				
AB	<p>A method is presented for the enzymic prodn. of chiral cyanohydrins employing free or immobilized enantioselective hydroxynitrile lyases. The method comprises performing the enzyme reaction, using an immobilized enzyme having a water content of 10 % by wt. or more and an org. solvent substantially immiscible with water as a reaction solvent, under such conditions that a liq. phase forms a homogeneous system without phase sepn. although it is satd. with water or an aq. buffer. The reaction mixt. consists of a suitable aldehyde, water, an org. solvent, prussic acid and an acid stabilizer. The aldehyde substrate is subjected to an alk. treatment before starting the reaction to remove any contaminating carboxylic acids that may inhibit the enzyme. The acidic compd. serves to stabilize the prussic acid. After completion of the enzyme reaction, unreacted prussic acid and org. solvent are recovered from the reaction mixt. by distn. and reused at least once. Thus, benzaldehyde was converted to (S)-mandelonitrile by (S)-hydroxynitrile lyase in the presence of tert-butylmethyl ether, prussic acid and hydrosulfurous acid.</p>				

=>

=> d 1 2

L1 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2003 ACS
RN 9075-38-1 REGISTRY
CN Lyase, hydroxymandelonitrile (9CI) (CA INDEX NAME)
OTHER NAMES:
CN (S)-p-Hydroxymandelonitrile lyase
CN E.C. 4.1.2.11
CN Hydroxynitrile lyase
CN S-Hydroxynitrilase
CN S-Hydroxynitrile lyase
CN **S-Oxynitrilase**
MF Unspecified
CI MAN
LC STN Files: AGRICOLA, BIOBUSINESS, BIOSIS, CA, CAPLUS, CASREACT, CEN,
CHEMINFORMRX, CIN, PROMT, TOXCENTER, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
68 REFERENCES IN FILE CA (1962 TO DATE)
2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
68 REFERENCES IN FILE CAPLUS (1962 TO DATE)

L1 ANSWER 2 OF 2 REGISTRY COPYRIGHT 2003 ACS
RN 9024-43-5 REGISTRY
CN Lyase, mandelonitrile (9CI) (CA INDEX NAME)
OTHER NAMES:
CN E.C. 4.1.2.10
CN Hydroxynitrile lyase
CN Mandelonitrile lyase
CN R-Hydroxynitrile lyase
CN **R-Oxynitrilase**
CN **R-Oxynitrilase**
MF Unspecified
CI MAN
LC STN Files: AGRICOLA, BIOBUSINESS, BIOSIS, CA, CAPLUS, CASREACT,
CHEMCATS, CHEMINFORMRX, CHEMLIST, CSChem, IFICDB, IFIPAT, IFIUDB,
TOXCENTER, USPATFULL
Other Sources: EINECS**
(**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
195 REFERENCES IN FILE CA (1962 TO DATE)
4 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
196 REFERENCES IN FILE CAPLUS (1962 TO DATE)

=>

L11 ANSWER 79 OF 92 CA COPYRIGHT 2003 ACS

AN 115:4140 CA

TI **Immobilized lipases having higher water content** and its preparation

IN Takahashi, Joji; Kimura, Noritoshi

PA Japan Vilene Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03067586	A2	19910322	JP 1989-206263	19890808
	JP 2886902	B2	19990426		
PRAI	JP 1989-206263		19890808		

AB An **immobilized** lipase having a high **water content** to optimize its catalytic activity is prepd. by mixing lipase with water and a hydrophobic **org. solvent** (1: 2-5: 15-20 by wt.) to form a paste, followed by immobilizing the **enzyme** paste to nonwoven fabrics. Immobilization of the lipase of *Candida cylindraceae* mixed with water and n-octanol on nonwoven polypropylene fabrics was shown and used for esterification of 2-bromobutyric acid with n-octanol.

*no miscible
organic solvents?
Sat. w/ H₂O?
TAKE for Japanese translation*

nd
//

L11 ANSWER 37 OF 92 CA COPYRIGHT 2003 ACS

AN 131:210965 CA

TI Lipase-catalyzed esterification reaction in an **organic solvent**: comparison between free and **immobilized** biocatalysts

AU Chulalaksananukui, Suphang; Longo, Maria Asuncion; Chulalaksananukui, Warawut; Condoret, Jean-Stephane; Combes, Didier

CS Departemnt Genie Biochimique Alimentaire, Inst. National Sciences Appliques, Toulouse, 31077, Fr.

SO Afinidad (1999), 56(480), 121-125

CODEN: AFINAE; ISSN: 0001-9704

PB Asociacion de Quimicos del Instituto Quimico de Sarria

DT Journal

LA English

AB The ability of *Mucor miehei* lipase to catalyze the esterification reaction between oleic acid and ethanol in a nearly anhyd. **org. solvent** has been investigated. First, a sol. lipase form was obtained by partial purifn. of a brute enzymic soln. The esterification activity of the lipase and its stability in *n*-hexane were assayed, and the influence of **water content** on activity was studied. Optimal reaction conditions were obtained for 10% wt. of water/wt. of purified **enzyme**. The reaction kinetics were detd. and they were found to fit a Ping-Pong Bi Bi mechanism in which inhibition by excess of ethanol has been identified. The catalytic properties of the sol. form of the **enzyme** were compared to those previously obtained for the **immobilized lipase**. Both showed the same mechanism, although some differences were found concerning the stability, values of the kinetic consts. and influence of **water content**.

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 46 OF 92 CA COPYRIGHT 2003 ACS

AN 129:119585 CA

TI Transesterification catalyzed by lipase **immobilized** on porous chitosan beads carrier

AU Kawamura, Yoshihide; Okano, Azusa; Tanibe, Hiroaki; Yoshida, Hiroyui

CS Inst. Research & Development, Fuji Spinning Co., Ltd., Oyama, 410-13, Japan

SO Kichin, Kitosan Kenkyu (1998), 4(2), 126-127

CODEN: KKKEFB; ISSN: 1340-9778

PB Nippon Kichin, Kitosan Gakkai

DT Journal

LA Japanese

AB Several different lipases were **immobilized** on chitosan carrier prepd. by introducing hydrophobic groups onto porous cross-linked chitosan beads. The **immobilized** lipases (ImLPs) were used for transesterifications between vinyl acetate monomer and racemic .alpha.-phenylethylalc. in **org. solvents**. The effects of the hydrophobic groups or water in a reaction system on ImLP activities were investigated. ImLP activity was stimulated by the stearic acid group introduced onto chitosan carrier. Addn. of water to the substrate soln. led to a low activity. When ImLP was preequilibrated at high **water activity** (equaled 100%), it showed the optimum activity yield.

CC 7-7 (Enzymes)

ST lipase **immobilized** transesterification chitosan carrier

IT **Enzymes**, biological studies

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)

(**immobilized**; transesterification catalyzed by lipase

immobilized on porous chitosan beads carrier)

IT Transesterification

(transesterification catalyzed by lipase **immobilized** on porous chitosan beads carrier)

IT 9001-62-1, Lipase

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)

(transesterification catalyzed by lipase **immobilized** on porous chitosan beads carrier)

IT 9012-76-4, Chitosan

RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)

(transesterification catalyzed by lipase **immobilized** on porous chitosan beads carrier)

IS liquid phase Sat with
H₂O ?

L20 ANSWER 20 OF 30 USPATFULL
 PI US 5346816 19940913

L20 ANSWER 17 OF 30 USPATFULL
 PI US 5714356 19980203

L20 ANSWER 13 OF 30 USPATFULL
 PI US 5885809 19990323

L20 ANSWER 10 OF 30 USPATFULL
 PI US 6225095 B1 20010501

L20 ANSWER 9 OF 30 USPATFULL
 PI US 6337196 B1 20020108
 WO 9830711 19980716

=> d his

(FILE 'HOME' ENTERED AT 15:48:40 ON 21 APR 2003)

FILE 'CA' ENTERED AT 15:48:48 ON 21 APR 2003

L1 43336 S WATER CONTENT
 L2 4572 S WATER ACTIVITY
 L3 825565 S ENZYME
 L4 47570 S L1 OR L2
 L5 1899 S L4 AND L3
 L6 119906 S ORGANIC SOLVENT
 L7 314 S L6 AND L5
 L8 3221608 S 10%
 L9 42 S L8 AND L7
 L10 74743 S IMMOBILIZED
 L11 92 S L10 AND L7

FILE 'WPIDS' ENTERED AT 16:25:06 ON 21 APR 2003

L12 4 S L11

FILE 'USPATFULL' ENTERED AT 16:28:39 ON 21 APR 2003

L13 34 S HYDROXYNITRILE LYASE
 L14 41 S OXYNITRILASE
 L15 15 S MANDELONITRILE LYASE
 L16 80 S L13 OR L14 OR L15
 L17 46714 S IMMOBILIZED
 L18 37 S L16 AND L17
 L19 187048 S ORGANIC SOLVENT
 L20 30 S L18 AND L19

=> log hold

COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
46.33	239.14

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE	TOTAL
ENTRY	SESSION
0.00	-23.56

CA SUBSCRIBER PRICE

SESSION WILL BE HELD FOR 60 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 16:37:26 ON 21 APR 2003

=> d his

(FILE 'HOME' ENTERED AT 14:26:04 ON 21 APR 2003)

FILE 'REGISTRY' ENTERED AT 14:26:13 ON 21 APR 2003

L1 2 S OXYNITRILASE

FILE 'CA' ENTERED AT 14:27:24 ON 21 APR 2003

L2 4464 S CYANOHYDRIN

L3 346 S OXYNITRILASE OR (HYDROXYNITRILE LYASE) OR (MANDELONITRILE LYA
S 9075-38-1/REG#

FILE 'REGISTRY' ENTERED AT 14:29:05 ON 21 APR 2003

L4 1 S 9075-38-1/RN

FILE 'CA' ENTERED AT 14:29:05 ON 21 APR 2003

L5 68 S L4

S 9024-43-5/REG#

FILE 'REGISTRY' ENTERED AT 14:29:17 ON 21 APR 2003

L6 1 S 9024-43-5/RN

FILE 'CA' ENTERED AT 14:29:17 ON 21 APR 2003

L7 195 S L6

L8 363 S L3 OR L5 OR L7

L9 188 S L8 AND L2

L10 98587 S IMMOBILIZ?

L11 17 S L9 AND L10

L12 43336 S WATER CONTENT

L13 4572 S WATER ACTIVITY

L14 152763 S MOISTURE

L15 195174 S L12 OR L13 OR L14

L16 1059 S L15 AND L10

L17 825565 S ENZYME

L18 389 S L17 AND L16

L19 17879 S L17 (3A) L10

L20 230 S L19 AND L15

L21 15364 S LYASE OR NITRILASE OR OXYNITRILASE

L22 2 S L21 AND L20

=> log hold

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

81.75

104.22

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

-11.78

-11.78

SESSION WILL BE HELD FOR 60 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 14:46:34 ON 21 APR 2003